

Syllabus for Econ 510: Applied Econometrics for Macroeconomics
Rutgers University
Department of Economics
Spring, 2008.

Contact Details:

Instructor: John Landon-Lane
Room: New Jersey Hall, Room 424
Telephone: (732) 932-7691
E-mail: lane@econ.rutgers.edu

Course Details:

Lecture Time: MW 1.10-2:30pm
Location: New Jersey Hall, Room 105

Course Overview

This course is an applied econometrics course, with the emphasis on methods with direct application to macroeconomics. The aim of this course is to develop the skills needed to do empirical research in the field of macroeconomics. Therefore, the course will concentrate on the application of methods and results to contemporary topics in the field of macroeconomics.

It is my belief that the best way to learn the techniques needed for research in applied macroeconomics is by doing. The practical component of this course will include data collection and computer programming. It is very rare for modern econometric packages to have commands to do all the things you would want to do in this course. Therefore, it will be necessary to write your own computer code to complete assignments that are given. I do not require students to use any one computer language or package but I do require students to give me properly documented programs as part of an answer to any assignment given in this class. I suggest that you pick a package and stick with it for the duration of the course.

Texts

The text that will be used in this class is

Lütkepohl, H. and Krätzig, M. (2004) *Applied Time Series Econometrics*, Cambridge University Press, Cambridge, United Kingdom. (ISBN 0-521-54787-3)

This is an excellent text and will be used as the text for the majority of the course.

This, however, is not the only text written about the topic of applied time series analysis. The following texts all have their good points and are useful resources for an applied macro-economist. The text by Hamilton (1994) is an excellent reference for time series analysis. This text covers most of the topics of this course in much more detail than this course requires. However, if you plan to undertake research using time series methods then I recommend that you buy this text.

Amisano, A. and C. Giannini, (1997) *Topics in Structural VAR Econometrics (2nd Edition)*, Springer-Verlag, Berlin.

Banerjee, A., Dolado, J., Galbraith, J. and D. Hendry, (1993), *Co-Integration, Error Correction, and the Econometric Analysis of Non-Stationary Data*, Oxford University Press, Oxford, England.

Bauwens, L., Lubrano, M. and J-F Richard, (1999) *Bayesian Inference in Dynamic Econometric Models*, Oxford University Press, Oxford, England.

Clements, M. P. and D. F. Hendry (1998) *Forecasting Economic Time Series*, Cambridge University Press, Cambridge, England.

Enders, Walter (1995) *Applied Econometric Time Series*, John Wiley & Sons, New York, NY.

Hamilton, James (1994), *Time Series Analysis*, Princeton University Press, Princeton, NJ.

Harvey, Andrew (1989), *Forecasting, Structural Time Series Models and the Kalman Filter*, Cambridge University Press, Cambridge, England.

Johansen, S. (1995), *Likelihood-Based Inference in Cointegrated Vector Autoregressive Models*, Oxford University Press, Oxford, United Kingdom.

Kim, C-J, and C. Nelson, (1999) *State-Space Models with Regime Switching: Classical and Gibbs-Sampling Approaches with Applications*, The MIT Press, Cambridge, MA.

Lütkepohl, H. (2005) *New Introduction to Multiple Time Series Analysis*, Springer-Verlag, Berlin.

Topics to be Covered:

The following is a tentative list of topics that will be covered in this course. I reserve the right to add or delete topics as the course progresses.

1. Univariate Time Series Topics

- a. stationary and non-stationary time series
- b. ARIMA
- c. trends and unobserved components in univariate time series.

2. Multivariate time series topics

- Vector autoregressions,
- impulse response functions and variance decompositions,
- co-integration,
- vector error correction
- Bayesian VAR forecasting
- structural VAR's

3. State-Space methods

- Kalman filter
- Markov switching
- Bayesian approaches to State-Space models.
- estimation of DSGE models using Bayesian methods.

4. non-linear and non-Gaussian state-space methods

- the particle filter

The above list is indicative of the topics that will be taught and the order in which they will be taught in this course. The topics and their order may vary as the course proceeds.

Course Evaluation:

The grade for this course is made up from two components:

1. Class assignments (60% of course grade)
2. Term Paper (40% of course grade)

Term Paper

You are required to write a research paper in this course. The only requirement that I place on this paper is that it must use econometric techniques covered in this course. Note, however, that this course is an applied course. The term paper will be graded equally on its economic and econometric content.

Students will be required to present to the class an outline of their proposed paper on Wednesday March 12. (The week before Spring Break). Students are required to give a final presentation of their paper during the Final Exam period.

Assignments

A number of assignments will be assigned throughout the course. All assignments must be attempted. A student cannot get a grade for this course if they have not attempted all assignments. Assignments are considered late if they are received after the end of class on the due date. Late assignments will receive a score of 0.

Office Hours

I am available by appointment. Please email me to set up a meeting if you want to discuss anything with me.